Meeting of the Central Valley Flood Protection Board
October 28, 2010

Staff Report
Placer County Department of Public Works
Dry Creek Bridge Replacement

1.0 – ITEM

Consider approval of Permit No. 18625 (Attachment B).

2.0 – APPLICANT

Placer County Department of Public Works, Auburn

3.0 – LOCATION

The project is located in west Placer County near Roseville on Cook Riolo Road (Dry Creek, Placer County, see Attachment A).

4.0 – DESCRIPTION

To replace existing bridge with a 350 feet long, 52 feet wide, three spans, cast-in place, pre-stressed concrete box girder, supported by three 4 feet diameter columns at each pier, supported on CIDH piles within the channel of Dry Creek.

5.0 – PROJECT ANALYSIS

The applicant is proposing to build a three spans cast-in place pre-stressed concrete box girder. The existing bridge was built in 1940. The bridge is oriented in a north/south alignment, carrying only one-lane of traffic with a bike/pedestrian lane. This existing bridge is approximately 200 feet long, consisting of a five spans. As built bridge plans are not available. The bridge and approach roadway are approximately 1 foot below the 100 yr flood water surface elevation. They were overtopped in 1986 and 1995.

The center span of proposed bridge shall be 120 feet with 115 feet spans either side for a total length 350 feet. The center span shall have the truss attached from the existing bridge fir visual purposes. It will be supported by three four foot diameter columns at each pier. The column foundations will be set below the calculated scour elevation. The abutments will be placed on driven piles. The footing of abutment will be 5 feet to 10

feet below the existing ground. Fill in front of abutments shall will a slope at 1.5:1 into the channel. Rock slope protection will be placed on the banks for scour protection.

5.1 – Hydraulic Analysis

The lower reaches of the Dry Creek watershed, especially downstream of Roseville, are characterized by very gentle slopes. The stream channels are generally well defined, but are not especially wide or deep.

The peak flows of 100 year at Cook Riolo Road provided by the County of Placer is estimated about 15,208 cfs. HEC-RAS model is used to analyze the output result of hydraulic conditions with existing conditions and proposed conditions. The result of water surface elevation (WSEL), velocity and freeboard by HEC-RAS model is given as follows:

Table 1. Result of HEC-RAS model

Condition	WSEL (ft)	Velocity (ft/s)	Low Chord Elevation (ft) [soffit]	Freeboard (ft)
Existing	109.08	4.32	103.75	-5.33
Proposed	108.76	2.88	112.0	3.24

The proposed bridge project improves the low chord elevation (soffit). It passes 100-yr flood discharge. The proposed bridge replacement project meets the Board's standards contained in Title 23, California Code, Article 8, Section 128(a)(10)(A) which states "The bottom members (soffit) of a proposed bridge must be at least three (3) feet above the design flood plane. The required clearance may be reduced to two (2) feet on minor streams at sites where significant amounts of stream debris are unlikely". The velocity of existing bridge, 4.32 ft/s, is reduced to 2.88 ft/s by proposed bridge replacement project.

The existing south approach roadway of bridge was inundated with the maximum depth of 1.07 ft about 700 ft during 100-yr flood event. The proposed bridge and south approach roadway will be improved, but it will be inundated maximum 0.63 ft about 243 ft. Caltrans and Placer county will manage by closing the Cook Riolo Road during the 100-yr flood.

The scour and countermeasure analyses were estimated by HEC-18 and HEC-20 model. The total scour of bridge is comprised of three components such as long-term aggradation and degradation, contraction scour and local scour. The total scour is about 11.73 ft for design discharge. Bank and abutment will be protected by Rock Slope Protection (RSP) with thickness of 22 inches minimum.

Based on these results, the proposed project will convey 100-yr base flood without significant damage either the flood plain or surrounding property.

5.2 – Geotechnical Analysis

This project has no significant geotechnical impacts to the existing streambank or the floodway. Excavation occurs at locations that are not critical to the integrity of the natural stream bank or creek. All fill, excavation, and temporary structures will be completed in compliance with Permit No. 18625 (see Attachment B) and Title 23.

5.3 – Additional Staff Analysis

The Dry Creek in the vicinity of proposed bridge replacement project is a natural channel. There are no levees, and there is not a levee maintenance district. There would be no vegetation planning for this bridge project.

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project, from all pertinent agencies are shown below:

- A 208.10 letter from the U.S. Army Corps of Engineers (USACE) is not required because the project is located in the regulated stream with no project levee or other project flood control facilities at or near the site.

7.0 – CEQA ANALYSIS

The Board, as a Responsible Agency under CEQA, has reviewed the Initial Study/ Mitigated Negative Declaration (June 2008, SCH No. 2008102099) and Mitigation Monitoring Plan for the Cook-Riolo Road Bridge Replacement Project, prepared by the lead agency, Placer County. These documents, including project design and the Placer County's resolution, may be viewed or downloaded from the Central Valley Flood Protection Board website at http://www.cvfpb.ca.gov/meetings/2010/10-28-29-2010agenda.cfm under a link for this agenda item. The documents are also available for review in hard copy at the Board and County offices.

Placer County determined that the project would not have a significant effect on the environment and adopted Resolution 2009-5 on January 13, 2009. Subsequently, the Notice of Determination was filed with the County Clerk of Placer County and the State Clearinghouse on January 23, 2009. Board staff finds that although the proposed project could have a potentially significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. The project proponent has incorporated mandatory mitigation measures into the project plans to avoid identified impacts or to mitigate such impacts to a point where no significant impacts will occur. These mitigation measures are included in the project proponent's Mitigation Monitoring Plan and address impacts to air quality, geology, hazardous materials, hydrology and water quality, biological resources, and cultural resources. The description of the mitigation measures are further described in the adopted Initial Study/Mitigated Negative Declaration.

8.0 – SECTION 8610.5 CONSIDERATIONS

1. Evidence that the Board admits into its record from any party, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

   The Board will make its decision based on the evidence in the permit application and attachments, this staff report, and any other evidence presented by any individual or group.

2. The best available science that related to the scientific issues presented by the executive officer, legal counsel, the Department or other parties that raise credible scientific issues.

   The accepted industry standards for the work proposed under this permit as regulated by Title 23 have been applied to the review of this permit.

3. Effects of the decision on the entire State Plan of Flood Control:

   This project has no negative impacts on the State Plan of Flood Control. Both hydraulic and structural impacts from the project construction are negligible.

4. Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

   Climate change issues have not been taken into account in the hydraulic analysis for this project and the water surface elevation change resulted from change in climate for the site is unknown. There are no other foreseeable projected future events that would impact this project.

9.0 – STAFF RECOMMENDATION

Staff recommends that the Board adopt the CEQA findings, approve the permit, and direct staff to file a Notice of Determination with the State Clearinghouse.

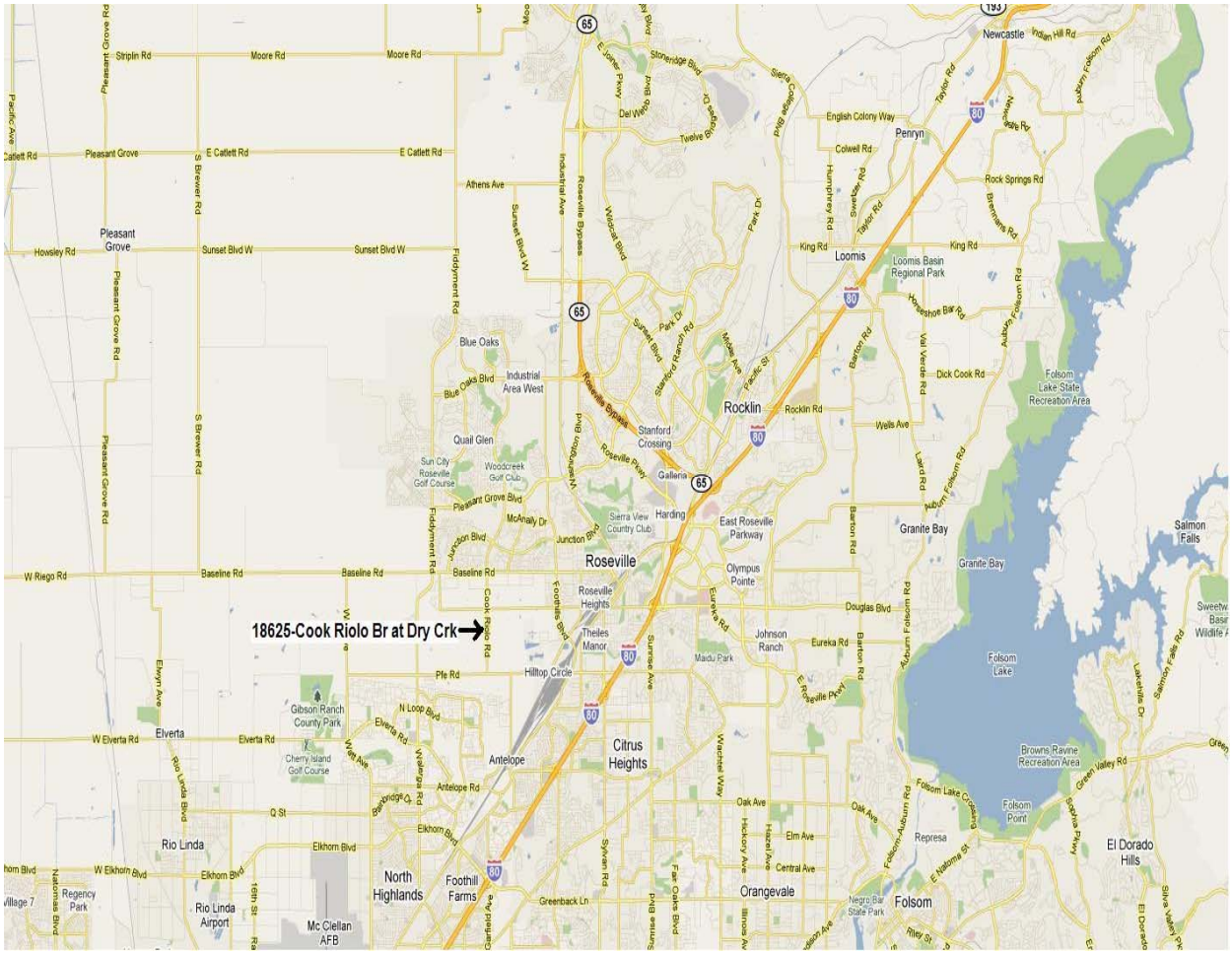
10.0 – LIST OF ATTACHMENTS

A. Location Maps and Photos
B. Draft Permit No. 18625
C. Cook Riolo Bridge at Dry Creek General Plan & Foundation Plan
D. HEC-RAS Model Result

Design Review:	Sungho Lee
Environmental Review:	Andrea Mauro
Document Review:	Len Marino

ATTACHMENT A

Vicinity Map



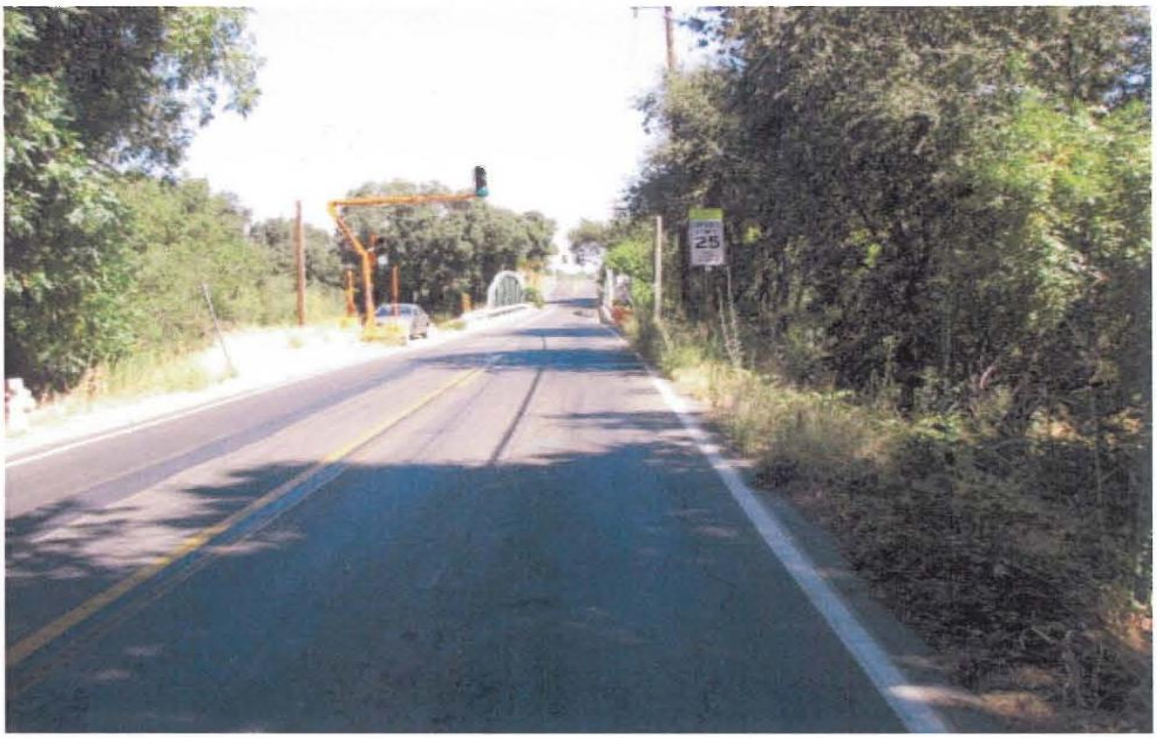
ATTACHMENT A

Project Location Map

ATTACHMENT A

Cook Riolo Road North Approach (Looking south)

Cook Riolo Bridge (Looking south)



Cook Riolo Road South Approach (Looking north)

Dry Creek West of Existing Bridge (Downstream), Looking North

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18625 BD

This Permit is issued to:

Placer County
3091 County Center Drive, Suite 220
c/o Jeff Apps
Auburn, California 95603

To replace existing bridge with a 350-foot-long, 52-foot-wide, three span, cast-in-place, pre-stresed concrete box girder bridge, supported by three 4-foot-diameter columns at each pier, supportred on CIDH piles within the channel of Dry Creek. The project is located in Roseville on Cook Riolo Road (Section 8&9, T10N, R6E, MDB&M, Dry Creek, Placer County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____ _____
Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 18625 BD

THIRTEEN: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Central Valley Flood Protection Board.

FOURTEEN: The permittee shall maintain the permitted encroachment(s) and the project works within the utilized area in the manner required and as requested by the authorized representative of the Department of Water Resources or any other agency responsible for maintenance.

FIFTEEN: The permittee shall contact the Department of Water Resources by telephone, (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 10 working days prior to start of work may result in delay of the project.

SIXTEEN: The Central Valley Flood Protection Board and Department of Water Resources shall not be held liable for any damages to the permitted encroachment(s) resulting from flood fight, operation, maintenance, inspection, or emergency repair.

SEVENTEEN: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted encroachment(s) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Central Valley Flood Protection Board may remove the encroachment(s) at the permittee's expense.

EIGHTEEN: The permittee shall be responsible for repair of any damages to the Mariposa Creek and other flood control facilities due to construction, operation, or maintenance of the proposed project.

NINETEEN: The permittee is responsible for all liability associated with construction, operation, and

maintenance of the permitted facilities and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion

TWENTY: If the project, or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project under direction of the Central Valley Flood Protection Board and Department of Water Resources, at the permittee's or successor's cost and expense.

TWENTY-ONE: The permittee shall provide supervision and inspection services acceptable to the Central Valley Flood Protection Board. A professional engineer registered in the State of California shall certify that all work was inspected and performed in accordance with submitted drawings, specifications, and permit conditions.

TWENTY-TWO: Upon completion of the project, the permittee shall submit as-built drawings to: Department of Water Resources, Flood Project Inspection Section, 3310 El Camino Avenue, Suite LL30, Sacramento, California 95821.

TWENTY-THREE: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior approval of the Central Valley Flood Protection Board.

TWENTY-FOUR: There shall be no plantings within the project area under this permit, except that of native grasses, which may be required for slope protection.

TWENTY-FIVE: If the permitted encroachments result in an adverse hydraulic impact, the permittee shall provide appropriate mitigation measures, to be approved by the Central Valley Flood Protection Board, prior to implementation of mitigation measures.

TWENTY-SIX: All cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

TWENTY-SEVEN: The new bridge shall have at least the same waterway area and vertical clearance as the replaced bridge.

TWENTY-EIGHT: The soffit of the bridge shall be no lower than that of the replaced bridge.

TWENTY-NINE: The abandoned or dismantled bridge shall be completely removed and disposed of outside the limits of the levee section and floodway.

THIRTY: Piers, bents, and abutments being dismantled shall be removed to at least 1 foot below the natural ground line and at least 3 feet below the bottom of the low-water channel.

THIRTY-ONE: Temporary staging, formwork, stockpiled material, equipment, and temporary buildings shall not remain in the floodway during the flood season from November 1 to April 15.

THIRTY-TWO: Falsework for the bridge shall be placed so that it will not obstruct the streamflow during the flood season from November 1 to April 15.

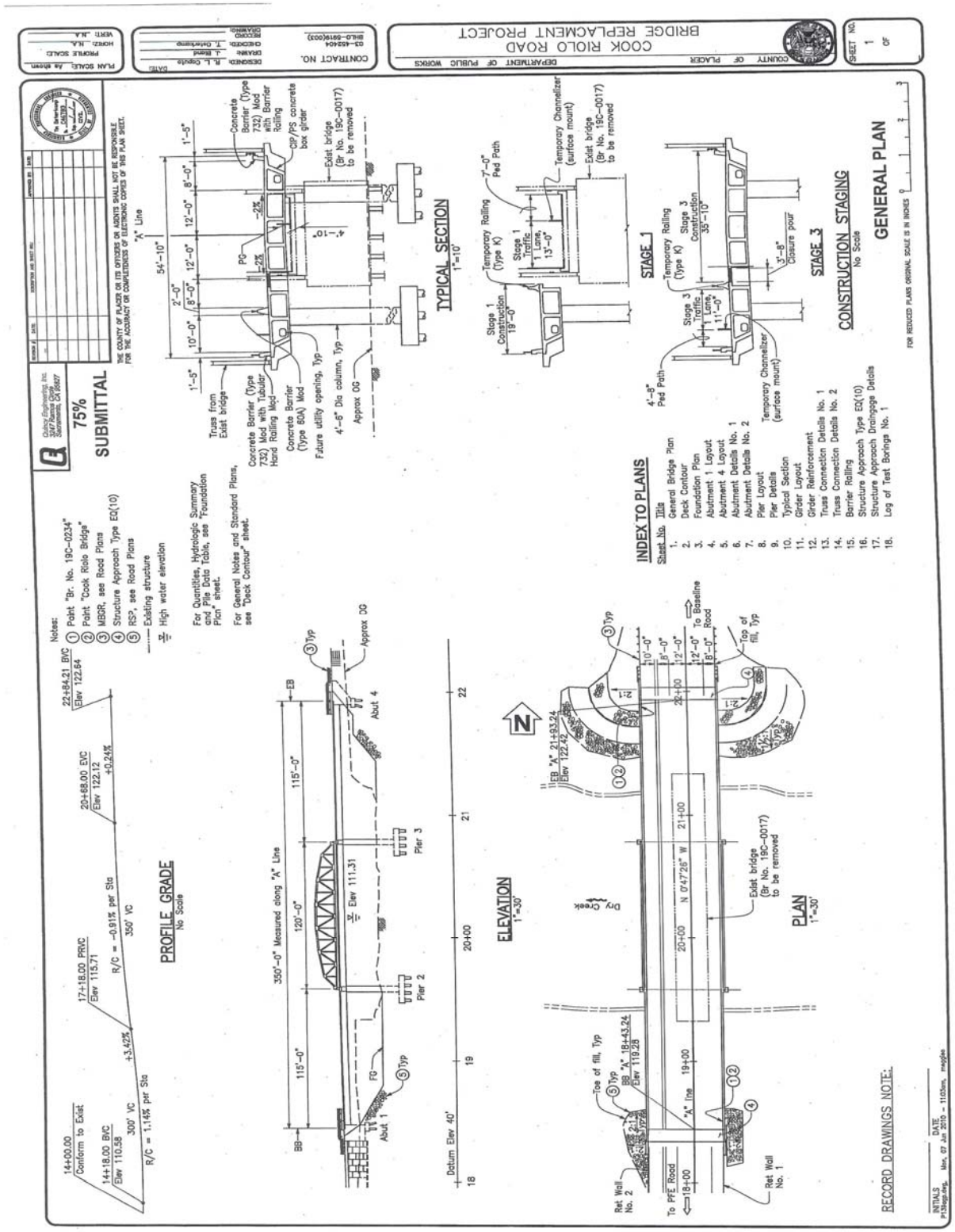
THIRTY-THREE: The work area shall be restored to the condition that existed prior to start of work.

THIRTY-FOUR: Trees, brush, sediment, and other debris shall be kept cleared from the bridge site and disposed of outside the floodway to maintain the design flow capacity and flowage area.

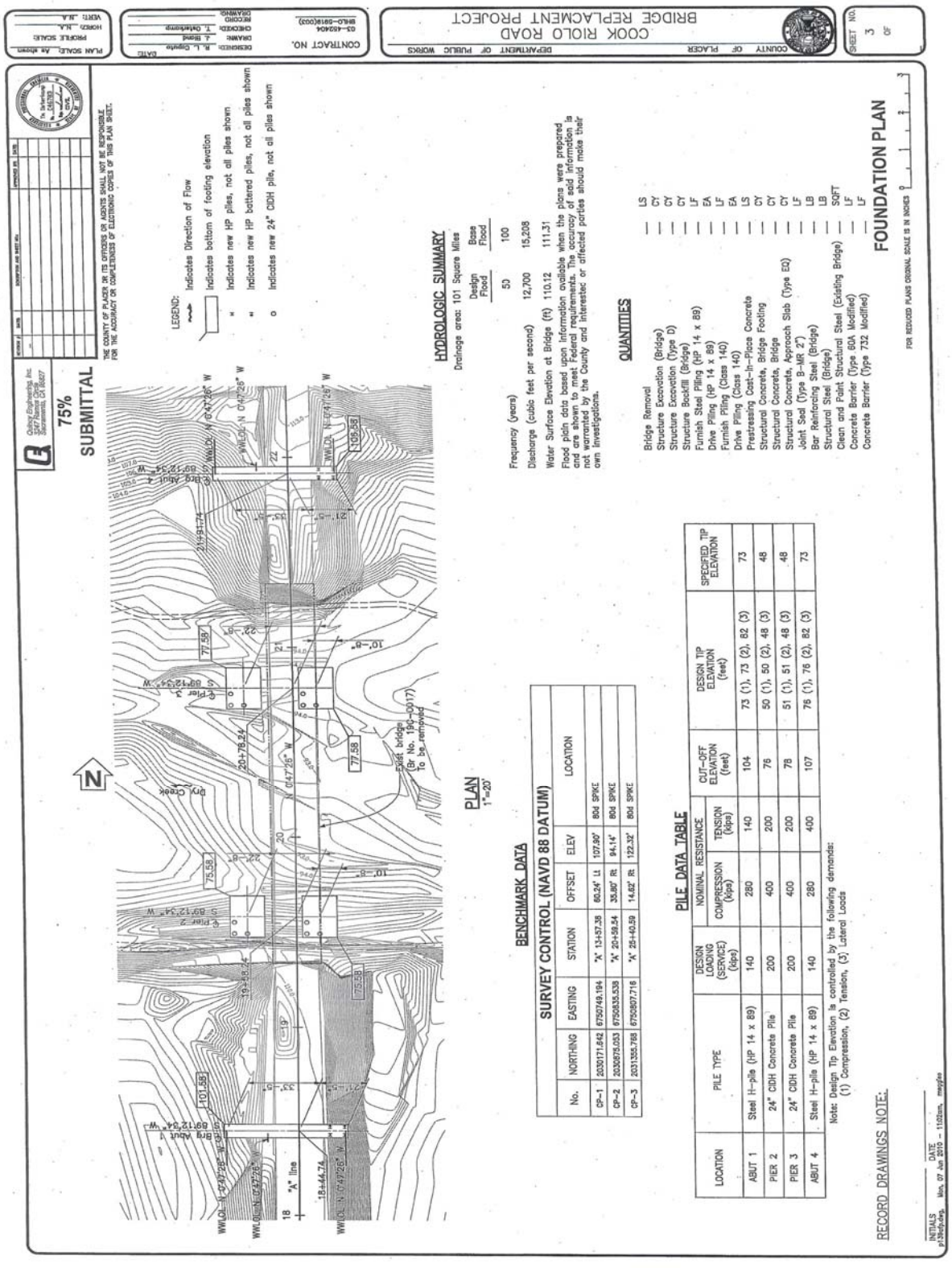
THIRTY-FIVE: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

ATTACHMENT C

Cook Riolo Bridge at Dry Creek General Plan



Cook Riolo Bridge at Dry Creek Foundation Plan



Existing Condition Result of HEC-RAS Model

HEC-RAS Plan: exist River: DRY CREEK Reach: DRY CREEK1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DRY CREEK1	24740	200-yr flow	18753.00	98.40	116.08	108.25	116.17	0.001490	2.53	7599.78	852.39	0.14
DRY CREEK1	24740	100-yr flow	15208.00	98.40	115.04	107.82	115.12	0.001420	2.31	6736.54	818.32	0.13
DRY CREEK1	24740	50-yr flow	12700.00	98.40	113.96	107.49	114.04	0.001520	2.21	5869.31	787.85	0.13
DRY CREEK1	24050	200-yr flow	18753.00	98.10	115.04		115.14	0.001514	2.57	7630.17	965.10	0.14
DRY CREEK1	24050	100-yr flow	15208.00	98.10	114.07		114.15	0.001396	2.32	6745.49	871.27	0.13
DRY CREEK1	24050	50-yr flow	12700.00	98.10	112.92		113.00	0.001494	2.22	5775.74	787.64	0.13
DRY CREEK1	23180	200-yr flow	18753.00	95.90	114.09	104.02	114.16	0.000860	2.12	8968.70	830.51	0.11
DRY CREEK1	23180	100-yr flow	15208.00	95.90	113.23	103.60	113.29	0.000734	1.87	8259.01	830.51	0.10
DRY CREEK1	23180	50-yr flow	12700.00	95.90	112.05	103.25	112.10	0.000746	1.76	7295.60	791.24	0.10
DRY CREEK1	22295	200-yr flow	18753.00	95.50	113.11	103.19	113.18	0.001510	2.04	9507.76	1370.82	0.10
DRY CREEK1	22295	100-yr flow	15208.00	95.50	112.38	102.76	112.43	0.001346	1.85	8519.55	1315.55	0.10
DRY CREEK1	22295	50-yr flow	12700.00	95.50	111.15	102.43	111.20	0.001485	1.80	7068.19	723.26	0.10
DRY CREEK1	21815	200-yr flow	18753.00	94.50	112.48	102.22	112.54	0.001190	1.93	9700.87	1320.68	0.09
DRY CREEK1	21815	100-yr flow	15208.00	94.50	111.82	101.73	111.87	0.001053	1.76	8830.05	1302.78	0.09
DRY CREEK1	21815	50-yr flow	12700.00	94.50	110.47	101.37	110.53	0.001309	1.82	6816.97	678.44	0.09
DRY CREEK1	21365	200-yr flow	18753.00	94.50	111.82	102.90	111.91	0.001675	2.20	8062.92	808.69	0.11
DRY CREEK1	21365	100-yr flow	15208.00	94.50	111.27	102.80	111.34	0.001297	1.88	7629.95	781.83	0.09
DRY CREEK1	21365	50-yr flow	12700.00	94.50	109.85	102.76	109.91	0.001432	1.81	6557.35	725.24	0.10
DRY CREEK1	20835	200-yr flow	18753.00	92.40	111.05	101.28	111.11	0.001376	1.96	9550.54	1206.46	0.10
DRY CREEK1	20835	100-yr flow	15208.00	92.40	110.68	100.83	110.72	0.001057	1.68	9106.00	1200.50	0.09
DRY CREEK1	20835	50-yr flow	12700.00	92.40	109.11	100.50	109.16	0.001415	1.78	7250.30	1137.39	0.10
DRY CREEK1	20706.80	200-yr flow	18753.00	91.10	110.96	99.56	111.00	0.000496	1.35	12122.06	1436.98	0.06
DRY CREEK1	20706.80	100-yr flow	15208.00	91.10	110.61	99.05	110.64	0.000377	1.16	11620.42	1433.01	0.05
DRY CREEK1	20706.80	50-yr flow	12700.00	91.10	109.02	98.66	109.05	0.000546	1.30	9350.97	1412.65	0.06
DRY CREEK1	20195	200-yr flow	18753.00	90.70	110.72	99.58	110.78	0.000381	2.06	10639.08	1107.67	0.09
DRY CREEK1	20195	100-yr flow	15208.00	90.70	110.44	99.07	110.48	0.000274	1.72	10322.68	1105.50	0.08
DRY CREEK1	20195	50-yr flow	12700.00	90.70	108.79	98.67	108.83	0.000335	1.76	8511.87	1093.10	0.09
DRY CREEK1	20153.48	200-yr flow	18753.00	90.07	110.69	100.55	110.75	0.000536	2.17	9588.21	1224.73	0.11
DRY CREEK1	20153.48	100-yr flow	15208.00	90.07	110.41	100.10	110.46	0.000387	1.82	9250.96	1222.19	0.09
DRY CREEK1	20153.48	50-yr flow	12700.00	90.07	108.76	99.69	108.81	0.000484	1.85	7259.58	1188.57	0.10
DRY CREEK1	20100.82	200-yr flow	18753.00	89.61	110.16	98.96	110.60	0.002021	5.30	3537.17	1229.41	0.22
DRY CREEK1	20100.82	100-yr flow	15208.00	89.61	110.06	98.12	110.35	0.001353	4.32	3517.76	1226.30	0.18
DRY CREEK1	20100.82	50-yr flow	12700.00	89.61	108.47	97.47	108.71	0.001295	3.97	3199.18	1122.78	0.17
DRY CREEK1	20045.39		Bridge									
DRY CREEK1	20025.39	200-yr flow	18753.00	89.89	109.47	99.10	109.95	0.001394	5.56	3372.61	1331.37	0.24
DRY CREEK1	20025.39	100-yr flow	15208.00	89.89	108.64	98.25	108.99	0.001085	4.74	3206.36	1046.46	0.21
DRY CREEK1	20025.39	50-yr flow	12700.00	89.89	107.48	97.62	107.76	0.000972	4.27	2973.92	868.53	0.20
DRY CREEK1	19987	200-yr flow	18753.00	89.89	109.55		109.63	0.000307	2.36	9374.32	1338.68	0.11
DRY CREEK1	19987	100-yr flow	15208.00	89.89	108.68		108.74	0.000255	2.07	8342.88	1052.73	0.10
DRY CREEK1	19987	50-yr flow	12700.00	89.89	107.49		107.55	0.000252	1.93	7201.15	870.96	0.10
DRY CREEK1	19765	200-yr flow	18753.00	89.30	109.42	99.20	109.49	0.001539	2.21	8827.00	1136.16	0.12
DRY CREEK1	19765	100-yr flow	15208.00	89.30	108.38	98.54	108.57	0.003020	3.49	4357.85	1125.95	0.17
DRY CREEK1	19765	50-yr flow	12700.00	89.30	107.23	97.80	107.39	0.002856	3.20	3974.38	749.82	0.16
DRY CREEK1	19205	200-yr flow	18753.00	88.23	108.41	98.06	108.51	0.002024	2.46	7613.30	1152.52	0.12
DRY CREEK1	19205	100-yr flow	15208.00	88.23	107.15	97.60	107.22	0.001869	2.21	6872.40	677.82	0.11
DRY CREEK1	19205	50-yr flow	12700.00	88.23	106.04	97.25	106.10	0.001809	2.04	6225.53	651.42	0.11
DRY CREEK1	18525	200-yr flow	18753.00	89.60	107.06	96.44	107.20	0.001837	2.98	6833.99	913.65	0.14
DRY CREEK1	18525	100-yr flow	15208.00	89.60	105.90	95.87	106.01	0.001694	2.70	5803.79	565.71	0.13
DRY CREEK1	18525	50-yr flow	12700.00	89.60	104.85	95.42	104.95	0.001587	2.47	5241.29	511.24	0.13
DRY CREEK1	17675	200-yr flow	18753.00	87.60	104.75	94.99	104.90	0.004372	3.11	6243.40	716.13	0.15
DRY CREEK1	17675	100-yr flow	15208.00	87.60	103.83	94.41	103.94	0.003791	2.75	5619.69	612.32	0.14
DRY CREEK1	17675	50-yr flow	12700.00	87.60	102.94	93.98	103.03	0.003455	2.49	5127.42	503.66	0.13
DRY CREEK1	17185	200-yr flow	18753.00	86.00	104.21	94.02	104.28	0.000559	2.18	8743.02	1230.98	0.10
DRY CREEK1	17185	100-yr flow	15208.00	86.00	103.22	93.50	103.31	0.000640	2.22	6507.66	628.60	0.11
DRY CREEK1	17185	50-yr flow	12700.00	86.00	102.39	92.94	102.47	0.000568	2.01	6000.96	594.42	0.10

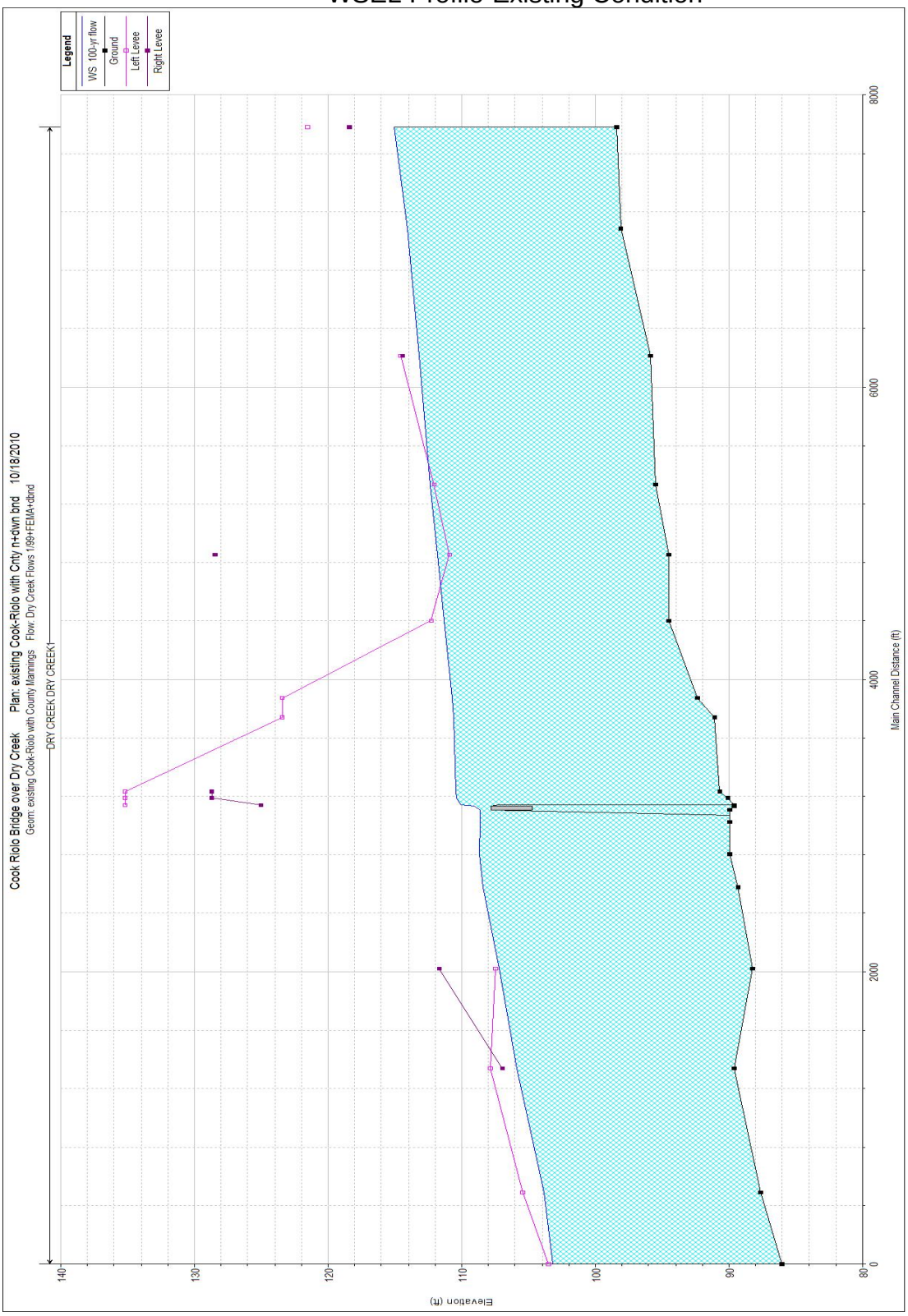
Proposed Condition Result of HEC-RAS Model

HEC-RAS Plan: proposed River: DRY CREEK Reach: DRY CREEK1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
DRY CREEK1	24740	200-yr flow	18753.00	98.40	115.99	108.25	116.08	0.001537	2.55	7523.46	849.43	0.14
DRY CREEK1	24740	100-yr flow	15208.00	98.40	114.86	107.82	114.94	0.001522	2.36	6586.98	812.16	0.13
DRY CREEK1	24740	50-yr flow	12700.00	98.40	113.82	107.49	113.90	0.001610	2.25	5761.20	782.83	0.14
DRY CREEK1	24050	200-yr flow	18753.00	98.10	114.91		115.01	0.001584	2.61	7504.06	954.59	0.14
DRY CREEK1	24050	100-yr flow	15208.00	98.10	113.80		113.89	0.001540	2.39	6512.02	855.72	0.14
DRY CREEK1	24050	50-yr flow	12700.00	98.10	112.72		112.80	0.001580	2.27	5629.93	703.39	0.14
DRY CREEK1	23180	200-yr flow	18753.00	95.90	113.91	104.02	113.98	0.000907	2.16	8818.53	830.51	0.11
DRY CREEK1	23180	100-yr flow	15208.00	95.90	112.86	103.60	112.92	0.000826	1.94	7952.63	830.51	0.10
DRY CREEK1	23180	50-yr flow	12700.00	95.90	111.78	103.25	111.83	0.000816	1.81	7087.07	763.15	0.10
DRY CREEK1	22295	200-yr flow	18753.00	95.50	112.85	103.19	112.92	0.001686	2.12	9147.94	1358.10	0.11
DRY CREEK1	22295	100-yr flow	15208.00	95.50	111.85	102.76	111.91	0.001697	2.01	7580.71	735.55	0.11
DRY CREEK1	22295	50-yr flow	12700.00	95.50	110.78	102.43	110.83	0.001682	1.87	6802.97	717.82	0.10
DRY CREEK1	21815	200-yr flow	18753.00	94.50	112.12	102.22	112.19	0.001395	2.05	9229.51	1312.19	0.10
DRY CREEK1	21815	100-yr flow	15208.00	94.50	111.10	101.73	111.16	0.001467	2.00	7897.21	1279.49	0.10
DRY CREEK1	21815	50-yr flow	12700.00	94.50	110.01	101.37	110.07	0.001505	1.90	6507.31	658.26	0.10
DRY CREEK1	21365	200-yr flow	18753.00	94.50	111.36	102.90	111.45	0.001921	2.29	7694.98	784.61	0.12
DRY CREEK1	21365	100-yr flow	15208.00	94.50	110.36	102.60	110.44	0.001733	2.06	6930.08	743.08	0.11
DRY CREEK1	21365	50-yr flow	12700.00	94.50	109.26	102.76	109.34	0.001763	1.94	6138.45	707.79	0.11
DRY CREEK1	20835	200-yr flow	18753.00	92.40	110.40	101.28	110.47	0.001815	2.17	8770.21	1195.98	0.11
DRY CREEK1	20835	100-yr flow	15208.00	92.40	109.43	100.83	109.49	0.001851	2.07	7620.83	1180.37	0.11
DRY CREEK1	20835	50-yr flow	12700.00	92.40	108.32	100.50	108.38	0.001860	1.93	6406.86	1014.95	0.11
DRY CREEK1	20706.80	200-yr flow	18753.00	91.10	110.28	99.56	110.33	0.000660	1.51	11149.53	1429.28	0.07
DRY CREEK1	20706.80	100-yr flow	15208.00	91.10	109.31	99.05	109.35	0.000678	1.47	9766.48	1418.26	0.07
DRY CREEK1	20706.80	50-yr flow	12700.00	91.10	108.20	98.66	108.23	0.000727	1.44	8198.40	1375.48	0.07
DRY CREEK1	20195	200-yr flow	18753.00	90.70	109.97	99.58	110.04	0.000484	2.24	9811.71	1101.99	0.10
DRY CREEK1	20195	100-yr flow	15208.00	90.70	109.02	99.07	109.07	0.000443	2.04	8759.73	1095.04	0.10
DRY CREEK1	20195	50-yr flow	12700.00	90.70	107.77	98.67	107.86	0.000719	2.44	5237.82	1054.08	0.12
DRY CREEK1	20153.48	200-yr flow	18753.00	90.07	109.93	100.55	110.01	0.000689	2.37	8726.49	1222.01	0.12
DRY CREEK1	20153.48	100-yr flow	15208.00	90.07	108.97	100.10	109.04	0.000639	2.16	7562.96	1219.28	0.12
DRY CREEK1	20153.48	50-yr flow	12700.00	90.07	107.75	99.69	107.82	0.000703	2.15	5911.77	727.23	0.12
DRY CREEK1	20100.82	200-yr flow	18753.00	89.61	109.77	97.68	109.94	0.000925	3.35	5603.41	1237.05	0.15
DRY CREEK1	20100.82	100-yr flow	15208.00	89.61	108.86	97.05	108.99	0.000738	2.88	5286.95	1230.90	0.13
DRY CREEK1	20100.82	50-yr flow	12700.00	89.61	107.67	96.58	107.77	0.000678	2.61	4868.25	799.52	0.12
DRY CREEK1	20045.39		Bridge									
DRY CREEK1	20025.39	200-yr flow	18753.00	89.89	109.59	97.75	109.76	0.000519	3.35	5651.49	1342.71	0.15
DRY CREEK1	20025.39	100-yr flow	15208.00	89.89	108.72	97.13	108.85	0.000410	2.87	5348.21	1058.63	0.13
DRY CREEK1	20025.39	50-yr flow	12700.00	89.89	107.54	96.66	107.64	0.000373	2.60	4934.34	877.56	0.12
DRY CREEK1	19987	200-yr flow	18753.00	89.89	109.55		109.63	0.000307	2.36	9374.32	1338.68	0.11
DRY CREEK1	19987	100-yr flow	15208.00	89.89	108.68		108.74	0.000255	2.07	8342.88	1052.73	0.10
DRY CREEK1	19987	50-yr flow	12700.00	89.89	107.49		107.55	0.000252	1.93	7201.15	870.96	0.10
DRY CREEK1	19765	200-yr flow	18753.00	89.30	109.42	99.20	109.49	0.001539	2.21	8827.00	1136.16	0.12
DRY CREEK1	19765	100-yr flow	15208.00	89.30	108.38	98.54	108.57	0.003020	3.49	4357.85	1125.95	0.17
DRY CREEK1	19765	50-yr flow	12700.00	89.30	107.23	97.80	107.39	0.002856	3.20	3974.38	749.82	0.16
DRY CREEK1	19205	200-yr flow	18753.00	88.23	108.41	98.06	108.51	0.002024	2.46	7613.30	1152.52	0.12
DRY CREEK1	19205	100-yr flow	15208.00	88.23	107.15	97.60	107.22	0.001869	2.21	6872.40	677.82	0.11
DRY CREEK1	19205	50-yr flow	12700.00	88.23	106.04	97.25	106.10	0.001809	2.04	6225.53	651.42	0.11
DRY CREEK1	18525	200-yr flow	18753.00	89.60	107.06	96.44	107.20	0.001837	2.98	6833.99	913.65	0.14
DRY CREEK1	18525	100-yr flow	15208.00	89.60	105.90	95.87	106.01	0.001694	2.70	5803.79	565.71	0.13
DRY CREEK1	18525	50-yr flow	12700.00	89.60	104.85	95.42	104.95	0.001587	2.47	5241.29	511.24	0.13
DRY CREEK1	17675	200-yr flow	18753.00	87.60	104.75	94.99	104.90	0.004372	3.11	6243.40	716.13	0.15
DRY CREEK1	17675	100-yr flow	15208.00	87.60	103.83	94.41	103.94	0.003791	2.75	5619.69	612.32	0.14
DRY CREEK1	17675	50-yr flow	12700.00	87.60	102.94	93.98	103.03	0.003455	2.49	5127.42	503.66	0.13
DRY CREEK1	17185	200-yr flow	18753.00	86.00	104.21	94.02	104.28	0.000559	2.18	8743.02	1230.98	0.10
DRY CREEK1	17185	100-yr flow	15208.00	86.00	103.22	93.50	103.31	0.000640	2.22	6507.66	628.60	0.11
DRY CREEK1	17185	50-yr flow	12700.00	86.00	102.39	92.94	102.47	0.000568	2.01	6000.96	594.42	0.10

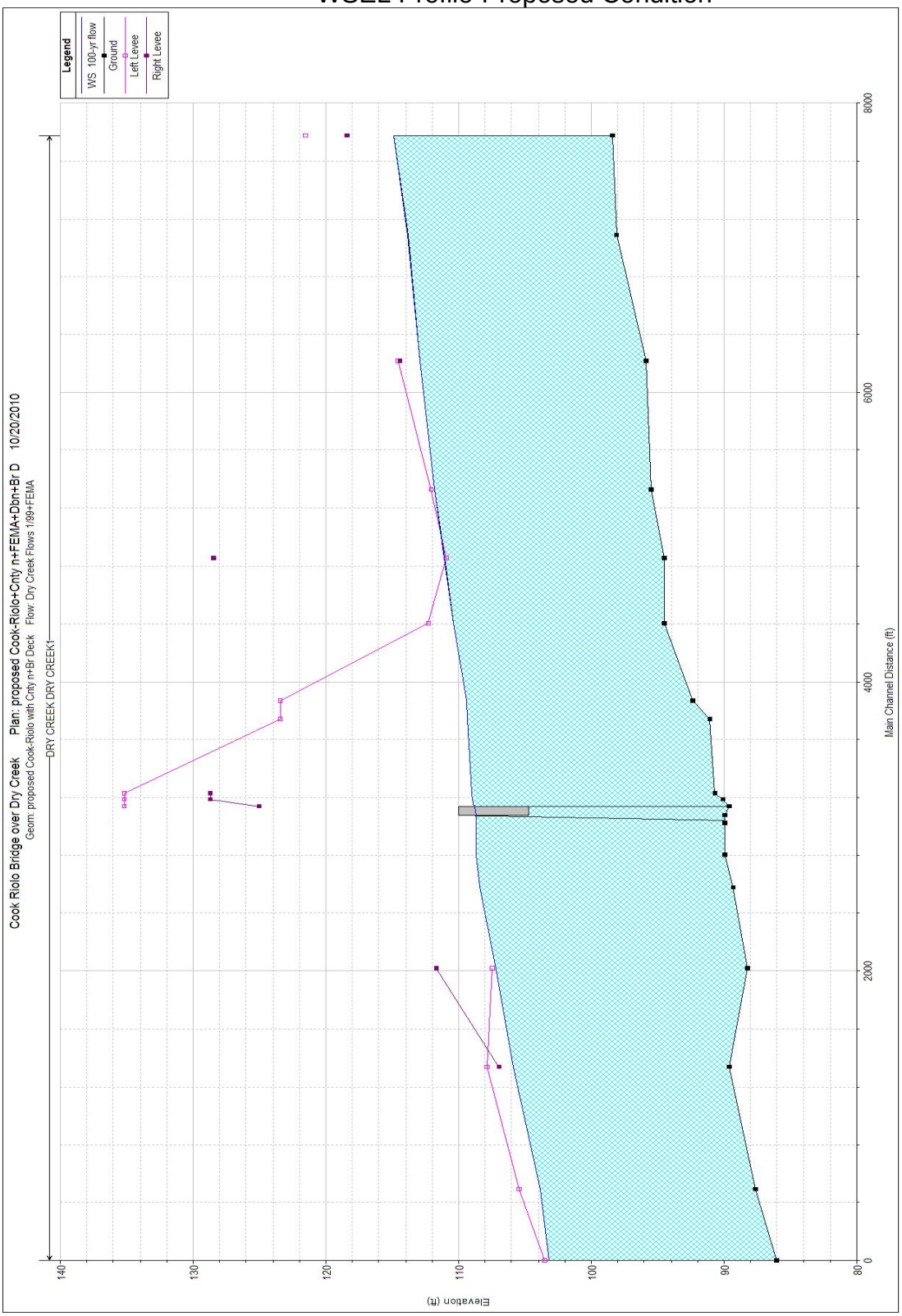
ATTACHMENT D

WSEL Profile-Existing Condition



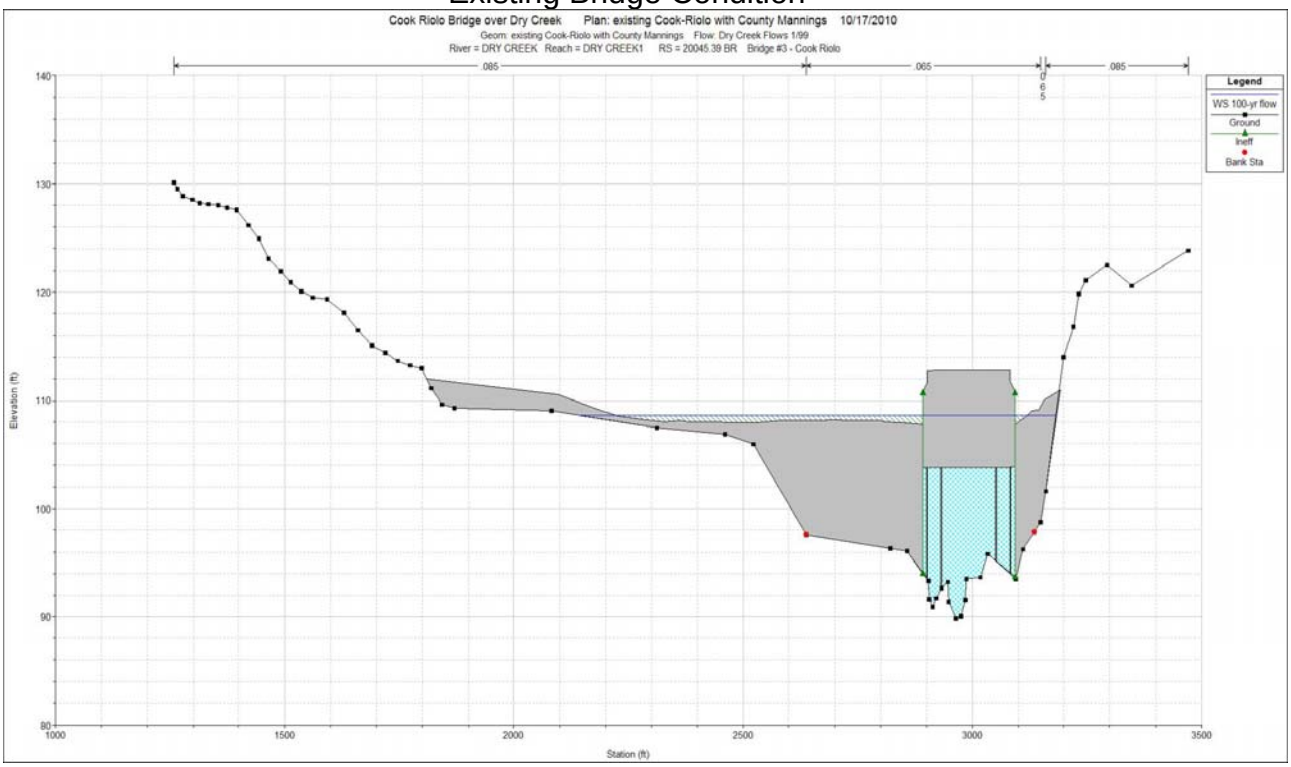
ATTACHMENT D

WSEL Profile-Proposed Condition



ATTACHMENT D

Existing Bridge Condition



Proposed Bridge Condition